STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENVIRONMENT

MANCHESTER
10622A

ENVIRONMENTAL ASSESSMENT / FINAL SECTION 4(f) EVALUATION

US DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

Signature: _____ ***Date:*** _____

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Signature: _____ ***Date:*** _____

August, 2000
Revised: January, 2001
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1.0 INTRODUCTION:

The proposed action (see Description of Proposed Action Section, Exhibit A2) is associated with an ultimate project to reconstruct and widen approximately 8.0 km (5 mi.) of Interstate 293 (I-293, a.k.a. F. E. Everett Turnpike) and its associated interchanges (Exhibit D). The ultimate project will begin at Exit 3 in the Town of Bedford and will proceed northerly where it will end just beyond Exit 7 in the City of Manchester. The widening of I-293 will provide a third lane in each direction, while the work associated with the interchanges will involve the reconfiguration of some of the ramps. These efforts are intended to improve vehicle operations and traffic flow. In addition, the proposed action is being developed to accommodate a future City managed project to widen Granite Street, beginning at the South Main Street / Main Street intersection and proceeding easterly through the Elm Street intersection.

2.0 EXISTING CONDITIONS / PROPOSED ACTION:

2.1. Study Area:

The project and study area are located in the western part of Manchester adjacent to the Merrimack River (Exhibits A1, A2, & B). It includes a section of I-293 where it passes through the historic Amoskeag Millyard, a residential neighborhood and a commercial district. The Interstate work will begin approximately 116 m (380 ft.) to the north of the Piscataquog River and will proceed northerly for approximately 1,524 m (5,000 ft.) where it will end and match in with the existing lane layout. The southwesterly quadrant of the study area is primarily residential and is bounded to the south by the elevated grade of the abandoned B&M railroad, to the west by Second Street and to the north by Granite Street. The northwesterly quadrant of the study area is mainly commercial, but includes the West High School's athletic fields. It is bounded to the south by Granite Street, to the west by Main Street and McGregor Street and to the north by Bridge Street. The entire easterly quadrant is undeveloped riparian bank associated with I-293, the northbound off-ramp and the Merrimack River.

I-293 looking south from the Bridge Street overpass

I-293 looking north from utility bridge overpass

The residential properties in the southwestern quadrant are composed of multi-family duplexes and a few single-family homes. Access is provided via Second Street and Turner Street, which parallel I-293. Perpendicular to these are several connector roads, which include Walker Street, Ferry Street, Bath Street and School Street. The access ramp from Granite Street to I-293 southbound is also located in this quadrant.

Multi-family homes along Turner Street looking south

The northwest quadrant is composed of a public athletic field and several small commercial businesses, which include, but are not limited to the following: Henry's Auto Body, Fredrick Flow, Air Service of N.H., Amoskeag News, McClelland News, Walker Power, Bogies, BB&L Machining, East Coast Towing, Ray The Mover, J.C.'s Auto Repair, Vermont Salvage, B. Rovner, and Alpha Bits. Access is provided via McGregor Street, Allard Drive and Lumber Lane, which parallel I-293. Perpendicular to these are several connector roads, which include Douglas Street, Chagnon Street, and Foundry Street. Historically there were spur lines from the B&M Railroad, which serviced many of the older buildings, but the rails have since been removed.

Allard Drive looking northerly

Granite Street, which is an important thoroughfare and links the eastern and western portions of the City, bisects the project area. To the west of I-293 it intersects with Allard Drive and Douglas Street to the north and Second Street to the south before connecting with Main Street / South Main Street. Along this section it is flanked by several commercial businesses, which include, but are not limited to the following: Raphael Social Club, Cumberland Farms, Auto Glass Center, and Exxon. To the east of I-293, Granite Street spans the Merrimack River and intersects with Commercial Street to the north, South Commercial Street to the south, Bedford Street to the north, and Canal Street, Franklin Street and Hampshire Lane to the north and south, before approaching Elm Street and the City's downtown district. Currently, access to and from I-293 and Granite Street is limited to a northbound off-ramp and a southbound on-ramp. Within the project area Traffic signals are located at the following Granite Street intersections: the northbound off-ramp, the southbound on-ramp, Second Street / Douglas Street and Main Street / South Main Street. The posted speed limit along Granite Street is 30 mph (50 kph) within the project area.

Granite Street looking westerly from I-293

Granite Street looking easterly from Second Street

Interstate 293 (a.k.a. F.E. Everett Turnpike) is a four-lane divided highway with only right-hand shoulders and was constructed in 1957. Prior to its construction, several Amoskeag Millyard structures and residential houses dominated the area. However, due to a decline in use of the mill buildings and the yard surrounding them, the least impactive alternative, at that time, was to construct the Interstate where it is today. Although numerous structures were demolished for the alignment, those that stood adjacent to the Interstate were saved. The remaining Amoskeag Millyard buildings are currently located along the westerly side of Allard Drive in a portion of the Amoskeag Manufacturing Millyard Historic District, a property eligible for the National Register of Historic Places. The existing and proposed speed limit along this section of I-293 is 50 mph (80 kph).

I-293 looking northerly atop Granite Street overpass

I-293 looking southerly from Bridge Street

2.2 Description of Existing Conditions / Proposed Action:

As part of the future ultimate Interstate reconstruction project to upgrade approximately 8 km (5 mi.) of I-293 in the Town of Bedford and the City of Manchester (Exhibit D), the Department is proposing the following action due to the need to replace a structurally deficient bridge and provide better access to and from I-293 and Granite Street. The proposed work will begin approximately 116 m (380 ft.) to the north of the Piscataquog River and will then precede northerly for approximately 1,524 m (5,000 ft.) where it will end and match in with the existing lane layout (Exhibits A1, A2 & B). The proposed design was developed minimizing impacts to social, economic, cultural and environmental resources in the project area to the extent practicable. The primary objectives of this project includes:

1. Replace and widen the existing I-293 bridge (No. 134/067) over Granite Street.
2. Provide more improved, wider left-hand shoulders along I-293.
3. Provide two new ramps for improved access to and from I-293 and Granite Street.
4. Minimize and mitigate impacts to the residential neighborhood, commercial businesses, and the historic Amoskeag Millyard.
5. Avoid impacts to the 100-year floodplain of the Merrimack River.
6. Minimize and mitigate impacts to the newly constructed parking lot associated with the West High School and its athletic field, which is a 4(f) / 6(f) resource.
7. Accommodate the possible future widening of Granite Street by the City.

2.2.1 Proposed Interstate Work:

The following narrative describes the proposed project in greater detail:

2.2.1.1 Interstate 293 Reconstruction / Realignment:

The reconstruction of I-293 is mainly associated with the replacement of the bridge over Granite Street (see Bridge Replacement section below). It was determined that building a replacement bridge on new location will improve constructibilty and reduce inconveniences to through traffic. Therefore, the new bridge will be built approximately 24 m (80 ft.) to the west of its current location. In all this will require approximately 1,524 m (5,000 ft.) of I-293 to be reconstructed on a slightly new alignment (see Exhibit A2). The design also incorporates additional pavement width to accommodate left-hand shoulders, and a possible future third lane in both directions associated with the overall 8 km (5 mi.) improvement project.

The existing and proposed lane layout is described below:

Existing Lane-Layout

Pavement width is 23.7 m (78 ft.)
Speed limit is 55 mph (88 kph)

Northbound
One 2.7 m (9 ft.) wide right-hand shoulder
One 0.9 m (3 ft.) wide left-hand shoulder
Two 3.6 m (12 ft.) wide travel lanes

Median
One 1.8 m (6 ft.) wide median with barrier

Southbound
One 2.7 m (9 ft.) wide right-hand shoulder
One 0.9 m (3 ft.) wide left-hand shoulder
Two 3.6 m (12 ft.) wide travel lanes

Proposed Lane-Layout

Pavement width will be 36 m (118 ft.)
Speed limit will be 55 mph (88 kph)

Northbound
One 3.0 m (10 ft.) wide right-hand shoulder
One 3.0 m (10 ft.) wide left-hand shoulder
Two 3.6 m (12 ft.) wide travel lanes
(One future 3.6 m (12 ft.) wide travel lane)

Median
One 1.8 m (6 ft.) wide median with barrier

Southbound
One 3.0 m (10 ft.) wide right-hand shoulder
One 3.0 m (10 ft.) wide left-hand shoulder
Two 3.6 m (12 ft.) wide travel lanes
(One future 3.6 m (12 ft.) wide travel lane)

To minimize impacts to the surrounding social, environmental and cultural resources, concrete retaining walls will be constructed along the northeast, northwest and southwest embankments of I-293. Although impacts are minimized, these measures cannot avoid the need to acquire several businesses (see Socio-Economic Resource section). The impacts will also require the reconstruction of Allard Drive on a new alignment (see Allard Drive description below). Furthermore, the westerly shift of I-293 will eliminate Turner Street, a residential frontage road that parallels I-293 to the south of Granite Street (see Turner Street description below).

Connecting in with the Interstate will be two new ramps, a northbound on-ramp and a southbound off-ramp (see descriptions below). The existing southbound on-ramp will be reconfigured.

In addition to the improvements identified above, the Department will be installing measures to improve the water quality of the Merrimack River by treating roadway runoff in specially designed systems. Pavement markings, signage, and W-beam type guardrail (weathering steel) will be reestablished as needed.

2.2.1.2 I-293 Bridge Replacement:

The existing bridge (134/067), which carries I-293 over Granite Street, has an overall length of 22.2 m (73 ft.). It is a single span steel I-beam bridge with a concrete deck and was constructed in 1957. Due to its age and extent of deterioration, the bridge is classified as structurally deficient with a Federal Sufficiency Rating of 71.8 out of a possible 100 points and is on the Department's "Red-List". As mentioned in the previous section, a new bridge will be constructed approximately 24 m (80 ft.) to the west of its current location in order to minimize impacts to traffic and reduce the construction period. To accommodate the City's proposed widening of Granite Street, the bridge will span 70 m (230 ft.), to allow for the future construction of a "single-point diamond" interchange (SPDI) once the City has completed their Granite Street improvements.

2.2.1.3 Proposed I-293 Northbound On-Ramp:

This ramp will be located between the existing I-293 retained embankment and the western shore of the Merrimack River (Exhibit A2, F & H). It will begin at Granite Street and will proceed northerly for approximately 731 m (2,400 ft.) where it will merge with the improved alignment of I-293. The pavement / travel lane width will vary between 8.5 m (28 ft.) at the Granite Street intersection, to 4.8 m (16 ft.) at the I-293 merge. There are no proposed shoulders until a point approximately 381 m (1,250 ft.) to the north of Granite Street where the merge begins.

Direct permanent impacts to the Merrimack River and its 100-year floodplain will be avoided by constructing concrete retaining walls, which will be used to minimize the footprint of the northbound on-ramp and the Interstate. The retaining wall for the ramp will be constructed just above the 100-year floodplain elevation of the Merrimack River. It will begin at the Granite Street intersection and will extend approximately 707 m (2,320 ft.) to the north where it will end and match in with an existing retaining wall. As a result of this effort to minimize impacts to the Merrimack River the entrance to the ramp will not align with the existing southbound off ramp. Access to this ramp will be controlled by the same set of traffic signals used for the southbound off ramp.

2.2.1.4 Proposed I-293 Southbound Off-Ramp:

The new ramp will intersect Granite Street approximately 46 m (150 ft.) to the west of the existing I-293 bridge to align with the improved southbound on ramp and will proceed northerly for approximately 609 m (2,000 ft.) where it will converge with the Interstate. The pavement / travel lane width will vary between 8.5 m (28 ft.) approaching the Granite Street intersection to accommodate 3.6 m (12 ft.) left and right turn lanes, to 6.0 m (20 ft.) where it converges with the Interstate. Traffic signals will coordinate and manage access to the ramp.

To accommodate the proposed alignment, there are several small businesses fronting Allard Drive that will be acquired and the buildings demolished. Avoidance and/or minimization of these impacts is not possible due to the presence of the newly created West High School parking lot, and the Historic Amoskeag Millyard District and the Merrimack River, all of which are protected resources and require impacts to be avoided and/or minimized. Although impacts to West High School property and the Amoskeag Millyard are minimized, avoidance was not possible due to their configuration and size (see the following sections on Public Lands / Recreation and Historical Resources, respectively for more details).

2.2.1.5 Existing I-293 Northbound Off-Ramp:

Since the Interstate will be shifting to the west, there will be little change to the existing ramp. It currently intersects with Granite Street approximately 21.3 m (70 ft.) to the east of the existing I-293 bridge and proceeds southerly for approximately 390 m (1,280 ft.) where it converges with the Interstate. Furthermore, approximately 228 m (750 ft.) of the northerly portion of the ramp is currently cantilevered over the Merrimack River to avoid direct impacts. The pavement width is 7.3 m (24 ft.) and provides for a 4.8 m (16 ft.) left turn-lane and a 4.2 m (14 ft.) right turn-lane.

I-293 northbound off-ramp looking south from Granite Street

The only change to the ramp will involve a minor jog in the alignment before the I-293 merge in order to better manage traffic (Exhibits A2 & E). Traffic signals will continue to manage traffic movements.

2.2.1.6 Existing I-293 Southbound On-Ramp:

The shifting of I-293 to the west will impact the alignment of the existing ramp, thus necessitating the reconstruction of the ramp on a new alignment. The alignment of the ramp will be configured to create a four-way signalized intersection with Granite Street and the proposed southbound off-ramp. From Granite Street, the ramp will extend approximately 305 m (1,000 ft.) to its merge with I-293. The existing and proposed pavement width is 7.0 m (23 ft.) and provides for one 6 m (20 ft.) wide travel lane and two 0.5 m (1.5 ft.) shoulders.

2.2.2 Proposed City-Streets Roadway Work:

2.2.2.1 Allard Drive:

Allard Drive provides access to several commercial business properties primarily along its westerly frontage. Its pavement width is 9.3 m (30 ft.) and provides for two 4.5 m (15 ft.) wide travel lanes and no shoulders. In association with the proposed Interstate improvements, including the new southbound off-ramp, the segment of Allard Drive from Granite Street north to Chagnon Street will be directly impacted. Although only two businesses will remain, the City requested that Allard Drive be re-established to maintain emergency access for the area. Therefore, it will be reconstructed on a new alignment just to the west of its current location. Furthermore, to eliminate an unnecessary intersection with Granite Street and improve traffic flow, its southerly end will connect into Douglas Street, which currently intersects with Granite Street just across from Second Street (Exhibits A2 & G). The northerly portion of the alignment will follow an abandoned railroad corridor and will intersect with Foundry Street approximately 73 m (240 ft.) to the west of its current location. The new roadway will have a pavement width of 9.1 m (30 ft.) and will provide for two 3.3 m (11 ft.) travel lanes and two 1.2 m (4 ft.) shoulders.

Allard Drive looking northerly

The construction of the proposed southbound off-ramp and the realignment of Allard Drive will require the acquisition and removal of five commercial buildings, and will impact approximately 526 m^2 (5,663 $ft.^2$) of the West High School parking lot, which utilized Land & Water Conservation Funds (L&WCF) for its development (see Public Lands section for more details).

2.2.2.2 Lumber Lane:

In addition to the impacts to Allard Drive, Lumber Lane, which is a short segment of road that wraps around the westerly side of Ray The Mover, will be discontinued and become surplus land of the City.

2.2.2.3 Douglas Street:

Douglas Street connects with Allard Drive just behind Henry's Auto Body and intersects with Granite Street across from Second Street. It provides access to several commercial business properties primarily along its southerly frontage. Its pavement width is 7.3 m (24 ft.) and provides for two 3.6 m (12 ft.) wide travel lanes and no shoulders. To better manage traffic patterns and minimize the number of intersections, the southerly end of

the realigned Allard Drive will connect into the easterly end of Douglas Street. This will provide access via the existing signalized Douglas Street / Granite Street intersection.

2.2.2.4 Turner Street:

The relocation of the southbound on-ramp will impact Turner Street. If Turner Street were reconstructed adjacent to the relocated southbound on-ramp it would require the acquisition of approximately eight multi-family residential buildings and one warehousing business. In order to minimize this impact, Turner Street will not be reconstructed, but rather connections will be provided between Ferry Street, Drummond Street and the public alley south of Ferry Street and between School Street and the adjacent public alley. Bath Street and Walker Street will be dead-ended and hammerhead turnarounds provided. A driveway will be constructed from Second Street near the former railroad bridge to access the residences at the east end of Walker Street (see Exhibits A1, A2 & E for details). This alternative will impact two multi-family dwellings and one single-family dwelling.

2.2.2.5 Granite Street:

As mentioned earlier, Granite Street is an important thoroughfare, which bisects the project area and connects the east and west sides of the City. Within the project area its pavement width varies from 14.6 m (48 ft.) to 22 m (72 ft.), which provides for the following lane-layout (see Exhibits A1, A2 & B):

East of the I-293 Overpass:

Eastbound	Westbound
One 1.8 m (6 ft.) wide sidewalk	One 1.8 m (6 ft.) wide sidewalk
No shoulders	No shoulders
Two 3.6 m (12 ft.) wide travel lanes	Two 3.6 m (12 ft.) wide travel lanes

West of the I-293 - Overpass to the Southbound On-Ramp Intersection:

Eastbound	Westbound
One 1.8 m (6 ft.) wide sidewalk	One 1.8 m (6 ft.) wide sidewalk
No shoulders	No shoulders
No left turn lane	One 3.6 m (12 ft.) wide left turn lane
Two 3.6 m (12 ft.) wide travel lanes	Two 3.6 m (12 ft.) wide travel lanes

West of the I-293 - Southbound On-Ramp to the Second Street Intersection:

Eastbound	Westbound
One 1.8 m (6 ft.) wide sidewalk	One 1.8 m (6 ft.) wide sidewalk
No shoulders	No shoulders
One 3.6 m (12 ft.) wide right turn lane	Two 3.6 m (12 ft.) wide travel lanes
Two 3.6 m (12 ft.) wide travel lanes	One 3.6 m (12 ft.) wide left turn lane

To the west of I-293, Granite Street is flanked by several commercial businesses, while to the east it spans the Merrimack River before approaching Elm Street and the City's downtown district. Currently, access to and from I-293 and Granite Street is limited to a northbound off-ramp and a southbound on-ramp. Furthermore, traffic signals are located at the following Granite Street intersections: the northbound off-ramp, the southbound on-ramp, Second Street / Douglas Street and Main Street / South Main Street. The posted speed limit is 30 mph (50 kph).

The Department does not propose any improvements to Granite Street, as these will be undertaken by the City in the near future. However, the Department has coordinated with City officials to ensure that any work associated with this project will ultimately accommodate any of the City's intended improvements.

3.0 PURPOSE AND NEED FOR SELECTED ACTION:

The purpose of the project is to replace the existing I-293 bridge (134/067) over Granite Street and improve access between I-293 and Granite Street at Exit 5. Due to heavy traffic volumes and deterioration of the bridge, the Department determined that it is functionally and structurally deficient and, therefore, warrants replacement. In addition to the problems with the bridge, access to and from I-293 is limited to a northbound off-ramp and a southbound on-ramp. Since Granite Street is an important east-west thoroughfare, which crosses the Merrimack River and connects east and west Manchester, additional access is essential. Furthermore, the City has identified the need for additional access at Exit 5 in their Master Plan, which addresses the revitalization of their downtown business district. The evaluation of this project also took into consideration the various local initiatives, which include a Civic Center, sports facility and university expansions.

The I-293 bridge over Granite Street is deteriorating and is currently on the Department's "Red-List" of structurally deficient bridges. The "Red-List" identifies those bridge structures which exhibit characteristics which may pose limitations/restrictions on certain load capacities and is based on the Federal Sufficiency Rating (FSR). A brief description of the Department's December 10, 1999 bridge inspection report is provided below.

Based on the Department's Inspection, this structure achieved a rating of 71.8 out of a possible 100 points, and therefore, indicates deficiencies and deterioration. The report notes the following concerns associated with the superstructure: the use of temporary supports as a means to reinforce certain areas, spalling and delamination of structural concrete over the travel ways of Granite Street, and cracking and leaking bridge deck and expansion joints. In addition to the superstructure, the substructure also shows evidence of structural problems, which include: cracking and spalling of concrete with exposed and corroded rebar associated with the abutments and wingwalls.

A traffic study conducted in the Spring of 2000 indicates that approximately 41,000 vehicles per day (vpd) utilize this section of the Interstate, which is projected to increase to 58,000 vpd by the year 2020. Furthermore, the same study also calculated traffic volumes along Granite Street through the project area, which accounts for approximately 28,000 vpd and is expected to increase to 40,000 vpd by the year 2020.

3.1.1 ***Traffic Accident Statistics:***

An Accident Data Report was prepared for this project, which identifies all reported and documented collisions along I-293 within the project area for the period between 1992 through 1999. During this period there were 76 accidents identified resulting in 29 injuries. There were no fatalities within this period. For the type of accident and number of vehicles involved refer to the table below.

Traffic Accident Summary Table:

Type of Accident	Accidents Reported
Rear End Collisions	3
Collisions While Passing	1
Left-Turn Collisions	1
Other or Unknown	71

3.1.2 Project Cost / Schedule:

Based on the scope of the selected action, this project is estimated to cost $26,400,000 and is funded by the Turnpike Program (100%). Pending a successful Public Hearing, to be held in August 2000, the project may advertise for bids in October 2002. Construction could then begin in the Spring of 2003.

4.0 ALTERNATIVES TO THE PROPOSED ACTION:

4.1.1 Introduction:

The following alternatives were reviewed during the preliminary design process and were not recommended because of engineering or financial constraints, property impacts, environmental impacts, and/or failure of the alternatives to adequately address the area's transportation needs and/or safety problems.

4.1.2 No Build:

This alternative would not correct any of the existing structural deficiencies associated with the existing bridge nor would it improve the functional characteristics of the interchange. As traffic volumes and economic development in the area continue to rise, the existing conditions would continue to decline to intolerable levels. The impacts attributable to the proposed actions are not of a magnitude to warrant this alternative.

4.1.3 Reconstruct I-293 on Existing Alignment:

This alternative was evaluated during the early stages of project development in an effort to minimize social, environmental and cultural impacts, as well as reducing construction costs. This alternative fails to adequately maintain traffic flow and service for Interstate and Granite Street traffic. To proceed with this alternative would require phased construction, extensive lane closure periods, and a longer construction period. Furthermore, to construct the proposed northbound on-ramp would require direct impacts to the Merrimack River. In addition, the proposed southbound off-ramp would still impact Allard Drive and some of the commercial business properties along its frontage. For these reasons this alternative was not selected.

4.1.4 Reconstruct Turner Street on New Alignment:

This alternative was also evaluated during the early stages of project development as a means to restore Turner Street as a frontage road (Exhibits A2 & E). This alternative would maintain the existing traffic circulation and emergency access through the neighborhood and would ease the replacement of subsurface utilities. However, this would result in the acquisition and subsequent demolition of eight multi-family residential structures and one warehousing business (see Socioeconomic Section for additional details). For these reasons this alternative was not selected and since the proposed action minimizes these impacts, Environmental Justice has been addressed.

4.1.5 Reconstruct Allard Drive Through Ray The Mover:

This alternative involves reconstructing Allard Drive immediately adjacent to the proposed southbound off-ramp (Exhibits A2 & F). The segment between the southerly end of Lumber Lane and Chagnon Street would be aligned through Ray The Mover's primary storage facility and would avoid the acquisition and demolition of the Vermont Salvage building. However, it would still impact the West High School property. Since the property value of Ray The Mover versus Vermont Salvage's is proportionately higher, the City requested that this alternative not be pursued.

4.1.6 Eliminate Proposed Northbound On-Ramp:

This alternative is not prudent since it fails to meet the purpose of this project, which includes provisions to improve access between I-293 and Granite Street. The location of the proposed northbound on-ramp is situated along the banks of the Merrimack River, which avoids impacts to the river itself as well as its 100-year floodplain. For these reasons this alternative was not selected.

4.1.7 Eliminate Proposed Southbound Off-Ramp:

This alternative also fails to meet the purpose of this project to improve access between I-293 and Granite Street. Although this alternative would minimize impacts to commercial properties along Allard Drive, it does not fully avoid them. For these reasons this alternative was not selected.

4.1.8 Summary:

Following the evaluation of the alternatives described above, it was determined that no other alternatives for the reconstruction of the I-293 bridge or the addition of access ramps meet the purpose and need of this project as well as the proposed action.

5.0 EVALUATION OF ENVIRONMENTAL EFFECTS:

5.1.1 Introduction:

In accordance with the National Environmental Policy Act (NEPA), the Department is responsible for the evaluation of the impacts this project will have upon the surrounding community and its environment. The evaluation includes a review of the following social, economic, natural and cultural resources/issues. Those that are present and/or are applicable to the design and construction of this project have a checked box, and are therefore, discussed in this document. Those that are not applicable do not warrant discussion for obvious reasons.

5.1.2 Resources/Issues:

Social/Economic

☒ Safety	☒ Displacements	☒ Land Acquisition	☒ Business Impacts
☒ Neighborhoods	☐ Farmlands	☒ Community Services	☒ Recreation
☒ Public Lands	☐ Energy Needs	☒ Construction Impacts	☒ Utilities
☒ Transportation Patterns	☒ Land Use	☒ Air Quality	☒ Tax Base
☒ Noise	☒ Hazardous Materials		

Natural

☒ Water Quality	☒ Surface Water	☒ Groundwater	☒ Floodplains
☒ Wildlife or Fisheries	☒ Endangered Species	☒ Natural Communities	☒ Wetlands
☐ Wild & Scenic Rivers	☐ Stream Rechannelization	☒ NH Designated Rivers	☐ Forest Lands
☐ Coastal Zone	☐ Invasive Species		

Cultural

☒ Historical	☒ Archaeological	☐ Stonewalls	☒ Aesthetics

The following information describes those resources / issues, which are affected by this project:

5.1.2.1 Safety:

Safety is a primary component of any NHDOT project. During the initial design stages, traffic accident statistics and safety needs / upgrades are evaluated and incorporated as appropriate. This project was initiated by the Department to correct the structural and functional deficiencies associated with the existing bridge (see Need section above). If no action were to be taken, this structure would continue to deteriorate and possibly pose potential safety problems. In association with its reconstruction, the Department is proposing to widen the deck to accommodate a left-hand shoulder and a possible future third lane for each barrel. The span of the bridge will also be lengthened to accommodate the proposed Single Point Diamond Interchange (SPDI) with Granite Street, which would be constructed when the City widens Granite Street. In addition, new guardrail will be installed including bridge rail. These improvements are expected to increase the level of safety for the traveling public.

5.1.2.2 Transportation Patterns:

5.1.2.2.1 I-293:

Interstate 293 (a.k.a. the F.E. Everett Turnpike) is a four-lane divided highway, which is classified as a major arterial. Within the City of Manchester there are four interchanges, which include Exits 4, 5, 6, and 7. Of these, the ones that are the closest to Exit 5 are: 1) Exit 4 located at the Queen City Bridge crossing, approximately 1.2 km (0.8 mi.) to the south of Granite Street, and 2) Exit 6, which is located at the Amoskeag Bridge crossing approximately 2.25 km (1.5 mi.) to the north of Granite street. Both Exits 4 and 6 provide full interchange capabilities.

Traffic counts taken in the Spring of 2000, show that approximately 41,000 vpd utilize this section of the Interstate. Of this, approximately 7% are trucks. A further evaluation indicates that approximately 20,200 vpd of the overall traffic use Exit 4 as a means to get across the Merrimack River, while approximately 28,600 vpd use Exit 6 for the same purpose.

5.1.2.2.2 Granite Street:

Granite Street is a four-lane city maintained road, which is classified as a local collector. It intersects with South Main Street and Main Street to the west of I-293 and U.S. Route 3 / Elm Street to the east.

Access to and from the Interstate and Granite Street for residences and businesses will be maintained during construction, however, there may be brief periods where construction efforts may cause temporary inconveniences. Provisions will be included to ensure there is no disruption to access for emergency vehicles and school buses.

The proposed improvements are expected to generate additional traffic volumes along Granite Street due to the two new ramps, which will result in higher congestion levels and delays, but will reduce traffic at Exits 4 and 6. These issues are proposed to be addressed by the City's plan to upgrade Granite Street. Their plans call for a SPDI and roadway widening to account for the additional traffic and improve traffic flow between Main Street and Elm Street. Therefore, after the City completes its work, traffic congestion and delays should be reduced.

5.1.2.3 Air Quality:

5.1.2.3.1 Introduction:

Manchester is one of two areas of the State classified "Non-Attainment" for Carbon Monoxide (CO). It was also part of the Manchester Marginal Ozone Non-Attainment Area. On June 5, 1998, the U.S. Environmental Protection Agency (EPA) published a final rule (63 FR 31014) identifying the Manchester Marginal Ozone Nonattainment Area as an area not violating the 1-hour national ambient air quality standard (NAAQS) and to which the 1-hour standard would no longer apply. The EPA took this action in anticipation of implementing its new 8-hour standard. However, as the US Court of Appeals for the District of Columbia circuit remanded the proposed 8-hour standard for ozone and curtailed EPA's authority to enforce it, the EPA is now in the process of reinstating the old 1-hour standard (64 FR 57424). Notwithstanding, the project was determined to be a "not exempt" project pursuant to the Transportation Conformity Rules. Therefore, air quality analyses for both regional emissions and localized CO impacts are required.

5.1.2.3.2 Regional Analysis:

In order to satisfy the conformity requirements established under the Clean Air Act Amendments (CAAA), this project was analyzed, along with other not-exempt and regionally significant projects in the nonattainment area, in a total burden analysis conducted as part of the Draft FY 2001 Conformity Determinations for Transportation Improvement Programs, Transportation Plans, and Regional Emissions Analysis of Transportation Projects in New Hampshire's Nonattainment Areas (December 12, 2000). The US Environmental Protection Agency (USEPA) and the US Department of Transportation (USDOT) reviewed this report. The conformity determinations were found to be in conformance with the State Implementation Plan and the CAAA and were approved by the USDOT in October 1998. The Conformity Determinations are currently being updated. This project will again be included in the total burden analysis.

5.1.2.3.3 Localized Analysis:

At the project level, the pollutant of concern is carbon monoxide (CO). Elevated CO concentrations, especially those approaching or exceeding the National Ambient Air Quality Standards (NAAQS), are expected at locations where vehicles tend to accumulate, slow down, and idle for a period of time. Congested signalized intersections where queues form during the red phase of the signal are the most likely locations. For this project, the areas of concern are the intersections of the I-293 ramps and Granite Street.

Microscale analyses were conducted to evaluate project level conditions in accordance with requirements of the National Environmental Policy Act of 1969 and the Clean Air Act Amendments of 1990. The analyses modeled "No-Build" and "Build" conditions for the years 2000 and 2020. The results of the analyses are shown in the following table.

RANGE OF MAXIMUM PREDICTED CO CONCENTRATIONS

	1-HOUR		**8-HOUR**	
YEAR	NO- BUILD	BUILD	NO- BUILD	BUILD
2000	4.3 – 8.8 ppm	6.6 – 10.0 ppm	3.6 – 6.8 ppm	5.2 – 7.6 ppm
2020	5.1 – 8.7 ppm	8.2 – 10.8 ppm	4.2 – 6.7 ppm	6.3 – 8.2 ppm

The maximum predicted concentrations for 2000 and 2020 are well below the one-hour (35 ppm) NAAQS under both the "no-build" and "build" conditions. All eight-hour CO concentrations are also below the standard (9 ppm). A comparison of CO levels between years indicates little change. This indicates the emissions

produced by increasing traffic volumes, is offset by the anticipated improvements in vehicle technology, as mandated by the Federal Motor Vehicle Exhaust Emissions Control Program.

Within a particular year, CO concentrations are higher under "build" conditions. Completion of the proposed ramps is expected to bring more traffic into the analysis area. As this air quality analysis did not include any corresponding improvements to Granite Street to handle the additional traffic, there is increased congestion and reduced traffic flow under "build" conditions. Higher CO concentrations are the result. The City of Manchester has proposed and is expected to make improvements to Granite Street. The improvements are designed to compliment the new ramps by providing capacity for the additional traffic and improving traffic flow between Main Street and Elm Street. Therefore, after the City completes its work, CO concentrations will be below those predicted for this project.

5.1.2.3.4 Conclusions:

As the results of the local analysis indicate that CO levels are below the NAAQS, and as it is anticipated these levels will be reduced further by additional improvements within the analysis area, it can be concluded that this project will not contribute to violations of the National Ambient Air Quality Standards. This project complies with the regulations of the Clean Air Act Amendments of 1990 and its potential impacts to air quality have been considered as required by the National Environmental Policy Act.

5.1.2.4 Noise:

5.1.2.4.1 Introduction:

The proposed reconstruction of Exit 5 on Interstate 293 in Manchester, NH is a Type I Highway Project because it includes a substantial realignment of the highway and the construction of new ramps. Therefore, an analysis of traffic-generated noise was conducted in accordance with the NHDOT's "Policy and Procedural Guidelines for the Assessment and Abatement of Highway Traffic Noise for Type I Highway Projects". The noise study was performed using the Federal Highway Administration's (FHWA) Traffic Noise Model analysis software. Estimated traffic volumes, in conjunction with roadway geometry and vehicle speeds, were used for computer input. Traffic generated noise levels were predicted for noise receptors within the project area.

The FHWA has established noise abatement criteria (NAC) of Leq 67 decibels (dBA) for residential receptors and Leq 72 dBA for business receptors. These criteria apply to ground-level exterior areas where frequent human use occurs and where a lowered noise level would be of benefit. Traffic noise impacts occur when the future predicted traffic noise levels approach (within 1 dBA), equal, or exceed the noise abatement criteria or when the future predicted traffic noise levels exceed the existing noise levels by 15 dBA or more. The NHDOT has adopted the FHWA's criteria for use on non-federal aid projects.

This noise analysis evaluated existing (2000) and anticipated future (2020) traffic noise levels. Impacted receptors were identified and appropriate noise abatement measures were evaluated. Results of the analysis are as follows.

5.1.2.4.2 Analysis:

The westerly side of Interstate 293 is highly developed. There are approximately 112 residential units, 12 commercial units, and an athletic field belonging to West High School are located within the noise analysis area. Commercial properties are predominantly located north of Granite Street. The athletic field is located between the commercial properties and Main Street. Residential properties are located from Granite Street, south to the old railroad corridor (see Exhibits A1, A2 & E). They include approximately 40 front-row units located on the

westerly side of Turner Street. Others, located between the front-row receptors and Second Street, were also included in this analysis.

Under existing conditions, traffic noise levels within this analysis area range from 70 dBA to 75 dBA, with all receptor locations exceeding the noise abatement criteria. Completing the proposed improvements will move the highway and the southbound on-ramp closer to the residential neighborhood requiring the acquisition of approximately 11 residential units (3 buildings). The proposed southbound off-ramp and Allard Drive relocation will require the acquisition of approximately 7 commercial properties. As a result of these improvements, traffic noise levels will increase by about 1 decibel at most of the remaining locations and will range from 70 dBA to 76 dBA.

By the year 2020, traffic noise levels are expected to increase by 1 or 2 decibels throughout the study area because of an increase in traffic volumes. Under the current configuration, traffic noise levels are expected to range from 71 dBA to 77 dBA. With the proposed improvements completed, traffic noise levels in 2020 will range from 72 dBA to 78 dBA throughout the analysis area.

5.1.2.4.3 Mitigation:

In accordance with the NHDOT Noise Policy, an examination of potential noise abatement measures was conducted after determining there would be noise impacts. When considering mitigation measures, primary consideration is given to exterior, ground level areas where frequent human use occurs and where a lower noise level would be of benefit. It was determined that traffic management measures were not practical for this location. Interstate 293 is a major highway in New Hampshire and this portion not only serves a highly developed section of the City of Manchester, but is also a major north-south corridor. With a dense mixture of commercial and industrial properties located north and south of the project area, rerouting truck traffic is not a practical alternative because of the local business and community requirements as well as commuter needs. Altering the horizontal and/or vertical alignments of the Interstate to a degree that would provide noise mitigation, as well as acquiring properties to provide a buffer zone were determined to be beyond the scope of this project.

The Department next considered the possibility of constructing noise barriers. The Department's policy emphasizes protecting residential areas and requires residential properties comprise at least 50 % of the total area that is proposed to be protected. Even though sports areas are grouped in the same land use category as residential land use, the Department did not consider the barrier for the West High School athletic field. Use of the field is sporadic and its use does not require a quiet environment. In addition, barrier construction would require a substantial financial cost with an indeterminate benefit. Therefore, barrier analysis was restricted to the residential area adjacent to Turner Street. A noise barrier to be located between the Exit 5 southbound on-ramp and Turner Street was analyzed. The barrier begins just south of Granite Street and runs southerly for approximately 503 m (1650 ft.). This barrier has a maximum height of 5.4 m (18 ft.) and is estimated to cost $500,000. It is anticipated the barrier will reduce traffic noise levels by 8 to 14 decibels at ground level locations throughout the analysis area.

Applying the reasonableness criteria of the NHDOT Noise Policy, the cost of a noise barrier is determined to be reasonable, or cost effective, when the total cost of the barrier, divided by the number of dwelling units receiving a 5 dBA or greater noise reduction, is $30,000 or less. Remembering that a barrier is designed to protect ground level, exterior activity, only first floor units of multi-family structures are included in the cost effectiveness calculation unless it can be clearly demonstrated that a multi-family dwelling provides ground level exterior activity for residents that occupy other levels of the structure. There are approximately 50 ground level residential units within the analysis area. This is a very densely developed area and there is little space that is not paved or covered by structures. To the south of Granite Street there are no formal recreational or park-like sites within the residential area. However, there are at least 4 ground level porches and several yards that could

benefit from a noise barrier. It is estimated these areas serve approximately 28 individual residential units. Therefore, an estimated per-receptor cost of the proposed barrier is approximately $18,000.

The feasibility of constructing this barrier still needs to be explored during design. There are several issues that need to be addressed. The lack of space between the buildings and the highway will make construction difficult. Completion of a barrier will make future highway and street maintenance activities difficult. In addition, the need to relocate utilities in the area of the ramp and existing Turner Street further complicates the practicability of constructing a barrier. If it is subsequently found during final design that these issues have a detrimental effect on either the reasonableness or feasibility of constructing the proposed barrier, it might not be provided. A final decision on the installation of the abatement measures will be made during the final design process, following the completion of public involvement.

5.1.2.5 Hazardous Materials:

5.1.2.5.1 Introduction:

The New Hampshire Department of Transportation (NHDOT) and CLD Consulting Engineers, Inc. (CLD) contracted Haley & Aldrich, Inc. (H&A) to perform hazardous material investigations within and adjacent to the project area.

5.1.2.5.2 Methodology:

H&A conducted two phases of hazardous materials investigations. Phase One consisted of an Initial Site Review (ISR) to evaluate potential "Recognized Environmental Conditions" (RECs) leading to the identification of properties that would warrant an Initial Site Assessment (ISA). RECs are defined as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water at the property.

The ISR consisted of a limited review of readily available State and local files relative to environmental conditions at properties within the project area and within 1,000-feet of the project area limits. The reviewed files consisted of:

- The New Hampshire Department of Environmental Services (NHDES) ALL SITES List
- NHDES Groundwater Hazards Inventory (GWHI) List
- NHDES Resource Conservation and Recovery Action (RCRA) List
- NHDES Underground Storage Tank (UST) List
- City of Manchester Fire Department Files; City of Manchester Health Department Files
- A report entitled, *"Initial Site Assessment, NHDOT Right-of-Way Acquisition Project, Manchester and Bedford, NH"* prepared by GZA Geo Environmental, Inc., in August of 1993.

An external site reconnaissance of the properties was also conducted from public thoroughfares. Upon completion of the ISR, ISAs were recommended for 21 properties, 9 within the project area and 12 within 305 m (1,000 ft.) of the project area. These 21 properties are as follows:

Recommended ISA Sites within the Project Area	
Type of Site	**Site Address**
Former Drywall Company	Walker Street
Granite Street and Exit 5 on-ramp area	Granite Street
Social/Night Club	Granite Street
Auto body Shop	Allard Drive
Commercial/Industrial Building	Allard Drive
Air Service Company	North Turner Street
Fleet and Truck Repair Facility	Allard Drive
Building Material Supplier	North Turner Street
Salvage Company	Allard Drive/2 Lumber Lane
Scrap Metal Collection Facility	Chagnon Street
Storage and Household Moving Company	Allard Drive
Recommended ISA Sites within 1,000-feet of the Project Area	
Type of Site	**Site Address**
Auto Store	Blaine Street
Oil Change Facility	Second Street
Plastifoam Facility	Blaine Street
Food Supplier	Second Street
Former Gasoline Station	Second and Granite Street
Real Estate Office	Main Street
Gasoline Station	North Main Street
Convenience Store	Granite Street
Automobile Glass Supply Store	Douglas Street
Armed Forces Reserve Center	North Main Street
Medical Health Center Parking Lot	McGregor/Foundry Streets

It was determined that an ISA would be performed on each of the highlighted sites in the above table. The ISAs did not include any testing or sampling of on-site materials. To identify the potential presence of RECs, the site history, observable conditions, and current site use were evaluated. The ISAs also consisted of an internal and external site reconnaissance of each property, as well as a records review of the data sources used for the ISR, and interviews with owners/occupants. A recommendation for further hazardous materials investigations including soil and groundwater sampling, to be done as part of a Preliminary Site Investigation (PSI) was completed for each ISA site and included in a summary ISA report.

5.1.2.5.3 Conclusions:

The following conclusions were drawn from the ISAs:

Type of Site/ Address	Type of Potential Contamination (REC)	PSI to be completed? (yes or no)	Comments
Former Drywall Company Walker St.	1 potential UST	No	No UST found; vent and fill pipes present on-site; UST is not listed with NHDES. The interior of the building was not accessible for review.
Granite Street and Exit 5 on-ramp area	Potential soil and groundwater contamination	Yes	Former site of two gasoline stations. Contaminated soils were encountered in the late 1980's during construction of the exit ramps. The soil and groundwater may be contaminated from nearby Leaking Underground Storage Tank (LUST) releases.
Social Club Granite St.	2 Above Ground Storage Tanks (ASTs) for fuel oil; potential groundwater contamination	Yes	Groundwater may be contaminated from up gradient LUST releases.
Autobody Shop Allard Dr.	1 UST for fuel oil; potential for additional USTs; 1 AST for waste paint; Waste Oil and Antifreeze stored in 55 -gallon drums; RCRA generator	Yes	This site is a RCRA generator due to the use and storage of flammable paint waste liquid. The status of the former gasoline USTs is unknown. The potential for soil and groundwater contamination from nearby gasoline station releases also exists.
Commercial/ Industrial Building Allard Drive	RCRA generator; potential for 1 fuel oil UST	Yes	This site is a RCRA generator due to the use of parts washing machines. The presence of the UST could not be determined. There is potential for soil and groundwater contamination from gasoline stations within the vicinity and from the on-site use/storage of hazardous materials.
Fleet and Truck Repair Facility Allard Drive	RCRA generator; past use of a parts washing machine; the use and on-site storage of cutting oil, motor oil and waste oil	Yes	This site is a RCRA generator due to the on-site storage of waste oil. There is potential for soil and groundwater contamination from on-site hazardous materials and from facilities within the vicinity.

Type of Site/ Address	Type of Potential Contamination (REC)	PSI to be completed? (yes or no)	Comments
Salvage Company Allard Dr./ Lumber Ln.	2 fuel oil ASTs; 1 potential UST	Yes	Stained soils associated with the ASTs warrant further investigation and the status of the UST is unknown.
Scrap Metal Collection Facility Chagnon St.	2 fuel oil ASTs; 1 diesel fuel AST; 1 100-gallon waste oil container; several 55-gallon drums are present	No	Several 55-gallon drums containing motor oil, hydraulic fluid, waste oil and antifreeze are present. There is potential for soil and groundwater contamination from releases of hazardous materials from facilities within the sites vicinity.
Storage and Household Moving Company Allard Drive	3 USTs; 1 AST; abandoned UST; on-site use and storage of oil and hazardous materials	Yes	The presence of an abandoned UST may be in violation of NHDES UST rules and other USTs may not be registered. Stained soils were observed.
Gasoline Station N. Main St.	5 gasoline USTs; LUST	No	A LUST in 1985 released 1,000-2,000 gallons of gasoline. The LUST and other USTs were removed and replaced with the current UST system in 1985. The degree and extent of the subsurface contamination was not determined.
Convenience Store Granite St.	2 gasoline USTs; LUST from upgradient and adjacent site	No	An upgradient and adjacent LUST released 1,000-2,000 gallons of gasoline into the subsurface in 1985.
Auto Glass Supply Store Douglas St.	1 abandoned fuel oil UST; 1 diesel fuel UST	No	Fuel oil & diesel fuel USTs were left in -place in 1975. Possible soil & g.water cont. from upgradient gas sta.
Medical Health Center Parking Lot McGregor/ Foundry Street	Possible USTs from former site use as a gasoline station; several 55-gallon drums the majority of which were empty	No	The status of the USTs is unknown. Random soil contamination associated with on-site fill material and groundwater contamination associated with former on -site foundry operations was discovered during previous environmental investigations.

5.1.2.5.4 Recommendations:

Based on the conclusions of the ISAs, the NHDOT has determined that a PSI will be completed on each of the following seven sites:

Type of Site	Site Address
Granite Street and Exit 5 on-ramp	Granite Street
Social/Night Club	Granite Street
Fleet and Truck Repair Facility	Allard Drive
Commercial/Industrial Building	Allard Drive
Salvage Company	Allard Drive / Lumber Lane
Storage and Household Moving Company	Allard Drive
Auto body Shop	Allard Drive

Each PSI will consist of:

- The installation of two groundwater monitoring wells at each site; and
- The collection of groundwater samples for volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) analysis.
- Summary report describing the PSI methodology and limitations, a discussion of the research, field investigations and laboratory results, and recommendations for further investigations in the form of more intensive soils and groundwater testing if necessary. The next phase is known as a Detailed Site Investigation (DSI).

It was also determined that additional work consisting of an evaluation of the potential sources for an apparent release of petroleum product would also be conducted during the PSI work. The release was discovered when NHDOT personnel observed petroleum product at an outlet pipe adjacent to the Granite Street Bridge on the West Side of the Merrimack River. H&A's evaluation will be based on inquiries to NHDES, field observations and a review of available municipal sewer and storm drain records.

5.1.2.6 Public Lands / Recreation:

5.1.2.6.1 Introduction:

Public lands are those properties that have been purchased with local, state and/or Federal funds for the sole purpose of providing services to the community. These include, but are not limited to: schools, parks, municipal service facilities, cemeteries, etc. One of the initial efforts associated with the development of this project was to identify if any of these properties occur within the project area. It was determined that the West High School athletic fields and parking lot is the only public land within the study area. It was also determined that this property was enhanced with Land & Water Conservation Funds (L&WCF). Section 6(f) of the Land and Water Conservation Fund Act states in part that no property acquired or developed with funding assistance from this act shall be converted to non-recreational uses without the approval of the Secretary of the Interior. New Hampshire administers the State's 6(f) lands through the New Hampshire Department of Resources and Economic Development, Division of Parks and Recreation (DRED), State Liaison Officer (SLO). The SLO has reviewed the project, understands the need for it and the associated impacts (see Section 2.2.1.4 and 6.1.4.2) and agrees that the proposed mitigation (see Section 6.1.4.4) is appropriate. The SLO is presently reviewing the project with the Regional Director of the National Park Service (NPS) and has received Department of Interior (DOI) approval (see Exhibits P1, P2, and P3). In addition, the Department has coordinated with West High School Officials regarding

these impacts and will continue to do so as required.

5.1.2.6.2 Description of Existing Resources:

The West High School athletic fields and parking lot are located on the easterly side of Main Street across from the school itself (Exhibits A1, A2, C & G). Monies allocated from the L&WCF were used by the City of Manchester in 1979 to improve sports and playfields, including a circle track and distance jump facility at city owned and controlled West High Memorial Field (DRED project No. 33-00367). Overall the entire Section 6(f) parcel encompasses approximately 24,055 m^2 (258,940 $ft.^2$). The parking lot consists of 103 spaces and was completed in 1999, whereas the athletic fields are still under renovation.

5.1.2.6.3 Summary of Impacts:

In association with the shifting of the Interstate and construction of the new southbound off-ramp, Allard Drive will need to be reconstructed on a new alignment (see Exhibit F & G). A portion of the new alignment crosses a small triangular section of the 6(f) property, where the parking lot is located (see Exhibit G). In accordance with Section 6(f), the Department has evaluated the possibility of avoiding impacts to this property. However, due to the configuration of existing 6(f) property lines, and the need to shift the Interstate, provide a new southbound off-ramp, and reestablish Allard Drive it was clear that avoidance was not possible. To minimize impacts, the design includes retaining walls along Allard Drive. In all approximately 526 m^2 (5,663 $ft.^2$) of the parking lot will be converted out of its current use, which will result in the loss of 15 parking spaces.

5.1.2.6.4 Mitigation:

The Land & Water Conservation Fund Act mandates that any conversion of 6(f) lands, to purposes other than its intended use, requires the approval of the Secretary of Interior and must be mitigated by an approved land swap. In addressing this issue, the Department is proposing to replace the 15 lost parking spaces and provide an additional 11 spaces, resulting in a total of 114 parking spaces in all once the project is completed. The mitigation site where this will occur is located immediately adjacent to the impacted portion of the existing parking lot. It includes a portion of the abandoned railroad corridor and a sliver of the Bogies property. The mitigation area encompasses approximately 890 m^2 (9,583 $ft.^2$). This will provide almost twice the area of that impacted by the project. Since the property is immediately adjacent to the conversion area, its fair market value (per acre) is estimated to be of equal value.

5.1.2.7 Socio-economic Impacts:

5.1.2.7.1 Introduction:

The socioeconomic impacts of the proposed highway improvements at the Exit 5 interchange are evaluated in terms of the required acquisition of properties, related displacements and tax base impacts, and with respect to indirect impacts on land use patterns and the local and area economy. This section summarizes the identified impacts; a more detailed review is on file with NHDOT.

The northern portion of the study area closest to I-293 contains predominantly older commercial, warehousing and industrial uses. The area south of Granite Street is developed primarily with large, older multi-family residential structures. Dividing these two portions of the study area is Granite Street, which supports primarily retail, office and service uses in this vicinity.

The northerly part of the study area appears to function primarily as a source of lower cost space for uses requiring storage and industrial garage space. In the 1993 City Master Plan, the portion of the study area served

by Allard Street and Lumber Lane is described as an "inner city transitional" area in which older industrial uses, originally established in association with rail access, have become economically obsolete. The future land use plan of the City Master Plan envisions continued evolution of such areas under guidelines that facilitate transition to new uses while allowing existing uses to expand. Pedestrian activity is indicated in and near the West High School athletic fields and student parking area between Granite Street and Douglas Street and the High School.

The portion of the study area to the south of Granite Street contains some retail uses, a restaurant and some office space along Granite Street. There is a small concentration of Public Housing within this portion of the study area, though none is directly affected by proposed property acquisitions. The affected properties south of Granite Street are predominantly multifamily residential rental uses. This portion of the study area (with the exception of Granite Street frontage properties) is described in the future land use plan of the City Master Plan as part of an established "core residential neighborhood". Large three story structures containing three to six dwelling units containing three bedroom units are typical in this neighborhood. The high density and lot coverage in the neighborhood offers little off-street parking; residents use Turner Street and the side streets for parking.

5.1.2.7.2 Displacement of Persons and Property:

The proposed project will require the acquisition of 11 buildings (3 residential and 8 commercial) and the displacement of 11 families and 13 businesses. The removal of these buildings is the minimum necessary to accommodate the proposed improvements. The following table lists the properties and their uses:

PROPERTY ACQUISITIONS	
ADDRESS	**USE**
175 Turner Street	4 Family Residence
183-185 Turner Street	7 Family Residence (two individual structures)
237 Granite Street	1 Business – "Raphael's Social Club"
8 Douglas Street	1 Business - "Henrys Auto Body"
52 Allard Drive	5 Businesses - "Fredrick Flow", "Air Service of N.H.", "Amoskeag News", "McClealand News", "Walker Power"
160 Allard Drive	4 Businesses - "Bogies", BB&L Machining", "Vacant Space", "East Coast Towing"
20 Allard Drive / 2 Lumber Lane	1 Business - "Vermont Salvage"
1 Allard Drive	1 Business - "Ray The Mover"

The proposed action would effectively remove Turner Street as a throughway by providing hammerhead turnarounds for the adjacent streets. It requires the acquisition of 3 residential structures containing 11 dwelling units (relocation of 11 families). The elimination of Turner Street will reduce the availability of on-street parking that is utilized by tenants in this high-density neighborhood because of very limited off-street parking. In addition, the removal of Turner Street may reduce the accessibility to a warehouse in that area. The cost of acquisition and relocation is about ¼ the cost of reconstructing Turner Street adjacent to the relocated southbound on-ramp.

Most of the units subject to displacement are believed to be occupied by low and very low-income tenants, though most are not recipients of housing assistance subsidy payments. There do not appear to be any major concentrations of minority populations that would be affected by acquisitions in the neighborhood. The 1990 non-white percentage of the neighborhood population is estimated at fewer than 2%, lower than the City average

of 3%. The Hispanic portion of the population in the neighborhood is estimated to be between 4-5%, higher than the City average of about 2% as of 1990.

The removal of 8 non-residential structures (north of Granite Street) will affect 13 businesses, containing just over 10,405 m^2 (112,000 $ft.^2$) of building area. Most of the floor area is contained in older buildings providing warehouse, industrial/service businesses and related storage. The businesses currently provide employment for an estimated 150 people based on inventories and surveys conducted by the Department.

The project will realign Allard Drive just to the west and will connect Douglas Street to Foundry Street, maintaining access to Ray The Mover and public road frontage that should enhance the development potential of several vacant and underutilized parcels in the vicinity. This could enhance the prospects of allowing displaced businesses to be re-established within the study area if they wish.

Various other parcels and portions of undeveloped lots will be acquired for the highway right-of-way. A portion of West High School property, now used for student parking, will be acquired, eliminating about 15 parking spaces. Property located immediately adjacent to the parking lot will be acquired to replace the lost parking.

As adopted by the State, the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, will control all of the acquisition and displacement activities required by the proposed action. Residential displacees affected by the required Right-of-Way acquisition may be eligible for a variety of compensation measures, which may include:

- Fair market value for acquired property.
- Relocation advisory assistance services.
- Payments for moving and relocation costs.
- Replacement housing payments for homeowners.
- Residential mortgage interest differential payments and closing costs.
- Replacement housing payments for tenants.

The displaced businesses may be eligible for relocation benefits, which may include:

- Fair market value for the acquired property.
- Relocation advisory assistance services.
- Payments for actual reasonable moving.
- Business re-establishment costs.

A review of real estate listings indicates an adequate supply of available, functionally similar, decent, safe, and sanitary residential dwellings for sale or lease in the existing inventory in Manchester to accommodate owner relocation needs. Most of the displaced households are expected to be low-income renters in need of larger (three bedroom) units. NHDOT interviews with landlords indicated that most of the affected tenants are not receiving housing subsidy payments. The current rental market is characterized by low vacancy rates and rising rents. Large, standard quality three bedroom units that are affordable can be difficult to secure under these market conditions. However, the total inventory of rental units has been increasing with new construction of apartments in the Manchester market in the past three years, some of which has included the development of lower income family apartments in the City. The number of renters potentially displaced is quite small in comparison to the City's rental housing stock. Even with a low vacancy rate, the volume and diversity of rental housing in Manchester should allow for adequate rental relocation alternatives. The Manchester Housing and Redevelopment Authority may also be a source of rental assistance or referral for very low-income tenants who qualify for available subsidized housing programs.

Should locating affordable housing for any residents displaced by the proposed action (owners or renters) within the existing housing stock or assisted housing programs prove infeasible, last resort housing will be made available, if necessary, in accordance with Chapter 10 of the New Hampshire Department of Transportation Right-of-Way Relocation Policy and Procedures manual and its governing regulations. Any individuals such as the elderly or disabled will have their special needs addressed prior to the acquisition stage.

A substantial amount of vacant space remains available in nearby Millyard buildings on both sides of the Merrimack River. There is also available industrial land in Manchester capable of accommodating displacement of a larger business in need of proximity to interstate highway access. There should be suitable buildings or land within the City or nearby towns to accommodate any of the displaced businesses.

It is possible that some of the businesses that are initially displaced may be able to relocate or rebuild close to their current location, which would minimize impacts on employment and business continuity. In the event that some jobs are permanently lost as a result of displacement, workers have excellent prospects of alternative employment under current market conditions.

The highway improvements should enhance the accessibility and road frontage of some commercial industrial sites in the vicinity.

During the construction phase of the proposed project, there may be some temporary impacts to businesses. Potential customers may avoid the construction area, potentially affecting sales. However, reasonable access will be maintained at all times during the construction period, in order to minimize impacts to businesses.

As stated earlier, the existing informal parking along Turner Street and Allard Drive will be lost (not including the impacts to the West High School parking lot). However, in the event replacement of parking is required, the Department will evaluate the potential to either reconfigure existing parking layouts or provide compensatory parking within or adjacent to the impacted properties, if possible. As this project continues to develop, the Department will continue to work with the property owners to work out the best possible solution.

5.1.2.7.3 Tax Base Impacts:

The total assessed valuation of properties subject to direct acquisition is between $1.96 and $2.61 million. As the total assessed valuation for property taxation in Manchester is approximately $3.8 billion, the maximum projected loss would therefore present less than one tenth of a percent of the City's assessed valuation. The loss in taxable valuation translates to between $60,000 to $80,000 per year in property taxes for state, city, school and county assessments. However, because the redevelopment potential that would remain following the completion of the project, and the improved accessibility to non-residential parcels of the study area north of Granite Street, it is possible that developed commercial/industrial parcels generating a higher value per square foot would follow and thereby mitigate the near-term loss of taxable valuation and associated revenues.

5.1.2.7.4 Indirect (Secondary) Impacts:

Access from I-293 to Granite Street provides a key linkage between the regional economy, the Manchester Airport, and the City's central business district, as well as the Amoskeag Millyard where a Scenic and Cultural Byway has been designated along Commercial Street. Improvements at Exit 5 will enhance the role of Granite Street as a primary access point to the Amoskeag Millyard; to the stadium and Riverfest uses at Singer Family Park (1997); to the Center of NH (private hotel and New England's largest conference center north of Boston); to a Visitors Center and science and technology museum in the Amoskeag Millyard at 200 Bedford Street; to an expanding Riverwalk project centering on the Amoskeag Millyard and designed to connect pedestrian ways

along (and possibly across) the Merrimack River; and to the Manchester Civic Center, which is currently under construction. General benefits of added convenience to downtown employers and commuters, as well as accommodation of increased visitor traffic, should follow from the proposed improvements, as accessibility to and from the area improves.

Improved access roads to the properties formerly served by Allard Drive and Lumber Lane should help stimulate redevelopment in the vicinity of the Exit 5 improvements. Sites with better highway access and new road frontage will create some opportunity for infill and replacement uses, possibly incorporating some businesses displaced by initial property acquisition. Improved accessibility should lead to increased land values, encouraging a transition to new developments of higher value. This transition is consistent with the goals for this area expressed in the City of Manchester Master Plan.

While new employment has been generated within nearby Millyard buildings on the easterly side of the Merrimack River in mixed-use developments in recent years, a considerable portion of the expansive mill building space remains vacant. The completion of the Exit 5 interchange is viewed as a critical component for supporting the revitalization of these structures. Recent surveys of Millyard property owners and business proprietors, conducted as part of the City's Amoskeag Millyard Scenic and Cultural Byway Management Plan (May 1999) indicated that I-293 proximity and access are viewed as one of the major positive attributes of the location that can support increased occupancy within Amoskeag Millyard buildings. The Exit 5 improvements will provide a more efficient interchange to support traffic volumes generated by the increasing concentration of redevelopment activity as the extensive vacant floor area remaining at the Millyard is absorbed by new uses.

The secondary impact of new highway interchanges is generally that of concentrating economic activity, and in some cases resulting in more highway-oriented amenity businesses in the immediate area of the interchange. Most of the area zoned for such business is already developed with similar uses along Granite Street.

In general, the City Master Plan envisions the older residential "core neighborhoods" as areas for neighborhood preservation and improvement. This project represents a further encroachment on multifamily properties that are already impacted by their proximity to I-293. Because of the high density of the residential neighborhood south of Granite Street, off-street parking is extremely limited, resulting in use of on-street space. As previously stated, this project will reduce the availability of on-street parking for the neighborhood.

It would appear that the proposed reconfiguration of City Streets connecting Allard Drive to Granite Street via Douglas Street may represent a potential for increased traffic volumes on Second Street through the residential neighborhood south of Granite Street. However, Second Street already carries substantial traffic that divides the affected residential area from the rest of the neighborhood. Pedestrian crossings of Second Street may become an associated issue for consideration as more vehicular traffic is attracted to the area.

5.1.2.7.5 Neighborhoods:

The portion of the study area to the south of Granite Street is predominantly composed of multi-family residential rental units and a small concentration of Public Housing. This portion of the study area (with the exception of Granite Street frontage properties) is described in the future land use plan of the City Master Plan as part of an established "core residential neighborhood". Large three story structures containing three to six dwelling units containing three bedroom units are typical in this neighborhood. The high density and lot coverage in the neighborhood offers little off-street parking; residents use Turner Street and the side streets for parking.

5.1.2.7.6 Community Services:

These are services that are established for the good and well being of the local community. They may include, but are not limited to: the Police Department, Fire Department, Schools, Libraries, Hospitals, Clinics, or other public health or religious facilities The potential for impacts to community services is an important aspect considered in the design and construction of any project. This is evaluated early on to ensure that appropriate measures are taken to minimize impacts and reduce the potential for inconveniences, especially for emergency response vehicles. Those services, which are either within or in close proximity to the project area, include the following:

- Catholic Medical Center
- West Manchester Community Center / Public Library
- West High School, and
- Two Elderly Housing Facilities in Project Study Area

Community services are not expected to be permanently affected. However, there may be brief periods where construction activities create temporary inconveniences with the exception of emergency response vehicles, which will be accommodated. Once the project is completed and the new ramps are open, it is expected that the response time for emergency vehicles will be greatly improved.

5.1.2.7.7 Environmental Justice:

Executive Order 12898, enacted in 1994, requires an Environmental Justice (EJ) evaluation be conducted for all transportation projects that are undertaken, funded, or approved by the Federal Highway Administration (FHWA) to avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, and social and economic effects, on minority populations and low-income populations. Therefore, as described in Section 5.1.2.7.2 Displacement of Persons and Property, it was identified that low and very low-income tenants occupy the residential neighborhood located to the south of Granite Street, within the study area. This area is bisected by a grid work of City maintained streets including Turner Street, which is adjacent to and parallels I-293. Due to the realignment of the existing southbound on-ramp further to the west, Turner Street will be directly impacted. It was originally recommended to reconstruct Turner Street further to the west in order to maintain traffic circulation and emergency access through the neighborhood as well as provide an area for the relocation of subsurface utilities. However, this would result in the acquisition and subsequent demolition of eight multi-family residential structures and one warehousing business (see Socioeconomic Section for additional details). For these reasons this alternative was not selected. In accordance with Executive Order 12898, a design was developed which minimizes impacts to residential properties, while still maintaining adequate emergency access. The preferred alternative eliminates Turner Street, but maintains emergency access by providing hammerhead turnarounds at the ends of each side road (see Exhibit A2). The resulting number of properties impacted is reduced to three residential structures (two multi-family and one single family dwellings). There are no other alternatives that further minimize or avoid impacts and still meet the purpose and need of this project, therefore, the proposed project meets and complies with Executive Order 12898.

In an effort to minimize noise levels to this residential neighborhood, a noise barrier is being proposed. The barrier begins just south of Granite Street and runs southerly for approximately 503 m (1650 ft.) feet. This barrier has a maximum height of 5.4 m (18 ft.) and is estimated to cost $500,000. It is anticipated the barrier will reduce traffic noise levels by 8 to 14 decibels at ground level locations throughout the analysis area.

5.1.2.8 Utilities:

The proposed project will require the relocation of overhead utility lines and power poles as well as underground utilities including sewer. On June 6, 2000, the Department's Design Services Section held a pre-hearing meeting to discuss concerns / issues associated with the proposed project. The only concern was raised by the Manchester Dept. of Public Works & Highways regarding impacts and the relocation of the existing City owned sewer line along Turner Street. Discussions regarding this issue will continue as appropriate. If during the construction period impacts to additional utilities are identified, then the appropriate utility companies will be notified to ensure disruption to service, if any, will be kept to an absolute minimum. The following utility companies have been identified within the project area:

SERVICE	LOCATION
Mediaone (CATV)	Aerial
Public Service of New Hampshire (PSNH)	Aerial
Bell Atlantic Telephone service	Aerial
Manchester Fire Department	Aerial
Energynorth Natural Gas, Inc.	Buried
Manchester Water Works	Buried
Manchester Dept. of Public Works & Highways (Sewer)	Buried

5.1.2.9 Endangered Species / Natural Communities / Wildlife and Fisheries:

The Department has coordinated with the appropriate resource agencies in charge of administering State and Federal regulations enacted to preserve, protect and manage federal or state, listed or proposed, threatened or endangered species, or other species or habitat of concern. On the Federal level, The U.S. Fish & Wildlife Service (USF&WS) oversees Endangered Wildlife Species under Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543). On the state level, The NH Fish & Game Department (NHF&GD) manages the Endangered Species Conservation Act - RSA 212-A, while the NH Natural Heritage Inventory (NHNHI) administers the NH Native Plant Protection Act - RSA 217-A.

Request for information letters were sent to the agencies listed above and response letters were received from the USF&WS and the NHNHI. The NHNHI stated that there are no known occurrences of sensitive species or natural communities within the project area (See Exhibit H). However, the NHNHI did indicate that the state endangered brook floater (Alismidonta varicosa) has been recorded in the Merrimack River and if impacts below the ordinary high water are anticipated, further coordination will be required. The information provided by the USF&WS states that the only known federally-listed or proposed threatened or endangered species under their jurisdiction that utilize the Merrimack River are wintering bald eagles (Haliaeetus leucocephalus) (See Exhibit I). Although this project does not involve impacts to the Merrimack River, it will require disturbance and the removal of the existing scrub/shrub and immature trees growing along its westerly riparian bank, which is not considered to be suitable bald eagles habitat. Coordination with the appropriate agencies will continue as required if the scope of the project increases.

5.1.2.10 Surface Water / Water Quality:

The Merrimack River begins at the hydroelectric dam in the Town of Franklin where the Pemigewasset River ends. From this point it flows southerly through the central portion of the state before entering into Massachusetts where it empties into the Atlantic Ocean, in the Town of Newburyport. Along its length, the river is impounded and its levels controlled by several active hydroelectric dams. Incorporated into these facilities are

anadromous Fish ladders, which allow Atlantic salmon to spawn upstream. In addition, there are many other fin fish species found in the river, which provide recreational fishing opportunities. Besides fishing, the river is used for canoeing, kayaking, swimming and boating. Along the easterly side of the Merrimack River, just upstream from the project area, there is an established kayaking course, which is used on a regular basis.

The Merrimack River meets "Class B" water quality criteria, as determined by the New Hampshire Water Supply and Pollution Control Division. "Class B" waters, according to state standards, are suitable for recreation purposes, fish habitat and for use as water supplies following prescribed treatment. "Class B" water requires turbidity levels not to exceed 10 Nephelometric Turbidity Units (NTUs) above naturally occurring levels. These levels are determined by taking readings 1.6 km (1 mi.) upstream from the point source of turbidity, and 1.6 km (1 mi.) downstream. A violation is determined if the level downstream is above the 10 NTUs on the day the readings are taken.

The improvements associated with the proposed project may have the potential to create temporary water quality impacts to the Merrimack River. These temporary impacts may involve increases in sediment and turbidity. To minimize water quality degradation during construction, adequate erosion control will be established. Prior to the commencement of work, the contractor will submit an erosion control and storm water management plan that is specific to this project for review by the Department and the NHWB.

During the final design phase, permanent storm water management and treatment measures will be investigated, presented to the Natural Resource Agencies, and implemented as required. It is expected that the water quality of the Merrimack River, if impacted, will return to normal either during or shortly after the project is completed. If impacts do occur, then monitoring and remedial actions will be taken. No long-term water quality impacts are anticipated.

5.1.2.11 Essential Fish Habitat:

Pursuant to Section 305 (b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), the Department coordinated with the National Marine Fisheries Service (NMFS) regarding Essential Fish Habitat (EFH) compliance. EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” and it applies only to those surface waters that support or historically supported species listed under the Endangered Species Act (ESA), such as the Atlantic salmon - *Salmo salar*. The NMFS determined that since this project does not involve work within the Merrimack River and approved erosion control measures will be employed, the proposed work is in compliance with MSFCMA.

5.1.2.12 Comprehensive Shoreland Protection:

The Comprehensive Shoreland Protection Act (CSPA) - RSA 483-B, was established to protect the significant shoreland and surface waters of the state. It is intended to maintain existing vegetative buffer zones, which function to improve water quality by abating erosion and trapping loose sediment and/or debris during severe storm events and periods of sheet runoff.

Since all of the proposed work within the CSPA zone is within the jurisdiction of the NH Wetlands Bureau (NHWB), a Dredge & Fill permit will be required and includes a review by the Shoreland Coordinator. This eliminates the need to obtain a separate variance.

5.1.2.13 Wetlands:

5.1..2.13.1 Introduction:

A field review and delineation was conducted to identify any jurisdictional wetland systems within the project study area. As a result of this effort, the Merrimack River and its associated riparian banks were the only wetland resources identified. The river was delineated utilizing the 1987 Federal Manual for Identifying and Delineating Jurisdictional Wetlands, produced by the U.S. Army Corps of Engineers, Wetlands Research Program. In addition, the wetlands were classified, utilizing the Classification of Wetlands and Deepwater Habitats of the United States, Lewis M. Cowardin, U.S. Department of the Interior, Fish and Wildlife Service, as a Riverine system. The riparian bank was delineated based on 4(H):1(V) or steeper topography. The Merrimack River is under the jurisdiction of the NHWB and the US Army Corps of Engineers (ACOE), while the riparian bank is solely under the jurisdiction of the NHWB.

5.1.2.13.2 Impact Discussion:

The proposed project does not involve any direct impacts to the Merrimack River or any other wetland type, however, there will be approximately 5,451 m^2 (58,672 $ft.^2$) of permanent impacts to NHWB jurisdictional bank. This impact was reviewed by the ACOE, the Environmental Protection Agency (EPA), the USF&WS, the Federal Highway Administration (FHWA), the NH Office of Emergency Management (NHOEM), the NHWB, and the NH Fish & Game Department (NHF&GD) at the May 21, 1992, June 16 and November 17, 1999 and the May 17, 2000, Monthly Natural Resource Review Meetings. Those in attendance had no objection to the project as proposed and concurred that the project qualified for a NHWB permit, and as presently proposed does not require a permit from the ACOE. It was also agreed that wetland mitigation is not required, however, subsurface treatment systems and surface water detention basins should be constructed to improve the water quality of storm water runoff. The Manchester Conservation Commission also responded with no objections.

Prior to the commencement of work, the selected contractor will submit to the Department a storm water and erosion control management plan specific to this project. Once approved and accepted by the Department, the appropriate erosion control measures will be installed prior to any earth moving activities.

5.1.2.14 Floodplains / Floodway:

The designated floodplain associated with the Merrimack River was identified and plotted (Exhibit J) based on the February 18, 1981 Flood Insurance Rate Map (FIRM), while the floodway (Exhibit K) was identified from the February 18, 1981 Flood Boundary and Floodway Map (FBFM). The boundaries for the 100-year floodplain were plotted onto the base plan (Exhibits J & K) and were used as a control to avoid permanent impacts to it. Since the floodplain occurs at a higher elevation than that of the floodway, it was not necessary to plot the floodway on the base plan. In order to avoid any permanent impacts to the 100-year floodplain, the alignment of I-293 is being shifted to the west away from the Merrimack River and concrete retaining walls are being used to minimize the footprint of the proposed northbound on-ramp and I-293. Although permanent impacts are avoided, it will be necessary to impact approximately 728 m^2 (7,836 $ft.^2$) of the 100-year floodplain in order to construct the retaining walls. This will involve grubbing of tree and shrub rooting systems and the excavation of soils along the bank for the installation of the retaining wall's footing. Following the completion of the walls, the temporary impact area will be restored to its previous elevations.

In accordance with the National Flood Insurance Policy (NFIP), the Department established coordination with the NH State Office of Emergency Management (OEM) on July 7, 2000, to receive their input. Since the proposed project only involves temporary impacts to the designated floodplain of the Merrimack River, the OEM expressed no concerns. In addition, coordination was also established with the appropriate City officials to

receive their input regarding these impacts. Coordination with the OEM and City officials will continue as needed.

5.1.2.15 Designated Rivers:

Designated rivers receive protection from the New Hampshire Rivers Management and Protection Program (NHRMPP) (RSA 483). It was developed in 1988, by the state legislature out of the need to manage the state's significant river resources for the benefit of present and future generations. On the state level, the designation of a river comes from the legislature, while the development and adoption of river corridor management plans is the responsibility of Local Advisory Committees. Furthermore, Department of Environmental Services (DES) administers the NHRMPP. One of the components of the NHRMPP is the protection of a ¼ mile riparian buffer zone along each bank of these rivers.

The only designated river in the immediate project vicinity is the Piscataquog River, which is located just south of the project. Its inclusion in the NHRMPP became effective on July 16, 1993. The portion of the Piscataquog River that is adjacent to the project is designated as a "Rural-Community" river, which is defined as "those rivers or river segments which flow through populated areas of the state and which possess actual or potential resource values. Such rivers have some residential or other building development near their shorelines, are readily accessible by road or railroad, and may include some impoundments or diversions."

Since a portion of the proposed project will occur within the protection zone of the Piscataquog River, the project was discussed with the Rivers Coordinator on July 20, 2000. It was determined that since the type of work within the buffer zone only involves a pavement match to tie in with the existing roadway, no further coordination is needed unless the scope of work within the protection zone changes.

5.1.2.16 Cultural Resources:

5.1.2.16.1 Historic Resources:

The section of the project area south of Granite Street is predominantly residential and comprised of multi-family, two and three story buildings constructed in the late 1870's and 1880's. All of the buildings are vernacular in style with decorative detailing. Nearly every building has been sheathed in some type of synthetic siding, mostly vinyl. In the mid to late 19th century the majority of German immigrants coming to Manchester settled on the west side in the Granite Street / Second Street vicinity, including the area south of Granite Street. They began to arrive in Manchester in large numbers after 1860. Most of them found work in the mills working as weavers, loom-fixers, dyers, machinists, carpenters, harness makers and other craftsmen. Others began businesses of their own, especially related to sausage and beer. West Manchester's German population left its imprint on the City in a number of ways including the establishment of churches, schools and societies. This residential neighborhood has lost significant integrity due to extensive 20th century alterations, especially the application of synthetic siding and fenestration replacement. As such, this area is not eligible for the National Register of Historic Places as a district. In addition, the individual buildings (175 and 183-185 Turner Street) being directly impacted by the project do not possess sufficient physical integrity to be individually eligible for the National Register. However, there may be other individual buildings within the overall project area that will not be impacted by this project, which could be eligible for the National Register.

The section of the project area north of Granite Street falls within the boundaries of the Amoskeag Manufacturing Company Millyard Historic District (see Exhibit M & N). The District includes resources associated with the operations of the company on both the east and west sides of the Merrimack River. Founded in 1825, the Amoskeag Manufacturing Company began to develop along the east side of the Merrimack River in the 1830's. Construction of the mill buildings at this site began in 1838. The company initially produced cotton and woolen cloth and later expanded into the manufacturing of machinery including locomotives. The company

expanded its operation west of the Merrimack River and north of Granite Street beginning in the 1870's. This property has been determined to be eligible for the National Register of Historic Places under Criterion A, as one of the most significant 19th and early 20th century industrial complexes in the United States. Evolving between 1838 and 1936, the buildings of the millyard illustrate the growth of what was once the largest textile producer in the world. The holdings of the Amoskeag Manufacturing Company, on the western side of the Merrimack River played an integral role in the operation of the company and illustrates the expansion of the company in the 1880's, following the introduction of Gingham Production. The company suffered bankruptcy in 1936 during the Great Depression.

The boundaries of the District include the entire Amoskeag Millyard on both sides of the Merrimack River. On the west side of the river, the District is bounded on the south by Douglas Street, on the west by South Main and McGregor Streets and on the north by the Pepsi-Cola bottling plant north of the Coolidge Mill. The boundaries of the district encompass the entire area including the contributing and non-contributing structures. There has been a considerable amount of new construction in this area in the last 50 years, primarily consisting of metal and concrete storage buildings. At the present time there are four contributing buildings and five non-contributing buildings within the western portion of the district. The contributing buildings are the three story, brick pattern house erected in 1887; the four story brick mill No. 11 built in 1889 through 1891; the three story brick mill No. 11 annex or cloth room constructed in 1891; and an early 20th century, one story, brick chemistry lab. Although the cotton storage building is not a contributing element in the District, the SHPO requested that the interior will be reviewed prior to demolition and any original and significant interior and exterior mechanical or architectural structural components associated with the cotton storage building will be recovered through photography, sketches, and description and salvage and preserved. Additional detailed information about this district is on file at the Department of Transportation's Concord office or at the Division of Historic Resources.

The Department coordinated with the N.H. Division of Historical Resources on April 16, 1992, June 9, 1994, June 10, 1999, March 2, 2000, and May 4, 2000 to evaluate and discuss historic and archaeological resources within the project area and what effect the project would have upon them. It was determined that the demolition of a contributing building (the Chemistry Laboratory) within the Amoskeag Manufacturing Millyard Historic District was an adverse effect (see Exhibit O). In addition, a Memorandum of Agreement (MOA) was prepared for approval and concurrence from the Advisory Committee on Historic Preservation (ACHP) (see Appendix I) was prepared for submission to the Advisory Council on Historic Preservation. It was also determined that mitigation for this adverse effect will be the following:

- Any original and significant interior and exterior mechanical or architectural structural components associated with the cotton storage building will be recovered through photography, sketches, and description and salvage and preserved.

- Develop and erect two interpretive signs to identify the original character of the Amoskeag Manufacturing Millyard and identify the importance of the German residential neighborhood south of Granite Street.

- Incorporate landscape plantings into the project as an aesthetic treatment.

- The former Ca. 1905 laboratory will be documented following the Historic American Engineering Record (HAER) guidelines.

5.1.2.16.2 Archaeological Resources:

A preliminary archaeological reconnaissance study was undertaken to identify the presence of prehistoric and historic resources that could be impacted by the proposed project. The results of this survey are documented in a

draft report (Goodby and Howe – 2000). This report assigned sensitivity for historic and pre-historic archaeological resources, also identified as urban archaeological resources, to the entire study area.

Information for the Preliminary Archaeological Reconnaissance Study was compiled from data contained in the statewide archaeological site inventory maintained by the NHDHR, published and unpublished archaeological studies in the vicinity, archaeological collections held by the Manchester Historic Association, historic maps and local and county histories housed at the New Hampshire State Historical Society, and observations made during the field reconnaissance. While there are no previously recorded archaeological sites within the study area, it is considered to exhibit sensitivity for prehistoric archaeological resources based on the environmental setting of the study area and the ample evidence for rich, deeply stratified archaeological sites from similar settings in the vicinity of Amoskeag falls. In addition, the potential to locate historic archaeological sites associated with the industrialization of the area, particularly with the textile industry, is high.

Further testing will be performed, after the public hearing, to define the nature and extent of the resources so a determination of National Register eligibility can be made. For any resources found eligible, the effect of the proposed construction will be determined. If a site is adversely affected, a determination will be made as to the importance of the site's preservation in place, versus data recovery. If preservation in place is recommended, a change in the design and location will be evaluated and implemented if determined feasible and prudent. If a site is found to be solely important for the information it contains, data recovery will be implemented.

It should be noted that potential resources in an urban environment such as this one present particular challenges to archaeological testing. Because potential resources may exist under areas paved surfaces or under existing buildings, they are not usually accessible to subsurface archaeological testing until the removal of these structures. Thus, although thorough identification of possible sites through the use of historic maps and other historic resources has been completed, the testing of many potentially sensitive areas cannot usually occur until after the beginning of demolition just prior to construction. Archaeological monitoring of this demolition phase is an important component of urban archaeology.

In urban areas, initial field-testing of archaeological sensitive areas occurs where the ground surface is exposed or at paved locations such as parking lots that are not under intensive use. This study occurs prior to construction. Following the results of archaeological subsurface testing in these limited areas, a determination will be made regarding the necessity for an Intensive Archaeological Study.

During construction, archaeological monitoring will be required at all identified sensitive areas that are not accessible to subsurface investigation prior to the demolition phase of construction. In the event archaeological resources are discovered during the period between demolition and construction, work efforts at that location will be postponed until the issue is resolved.

5.1.2.17 Aesthetics:

The project area is characterized as a densely settled urban environment. The primary features include I-293, Granite street, the commercial development to the north of Granite Street along Allard Drive, the two and three story multi-family rental units to the south of Granite Street along Turner Street, and the Merrimack River to the east of I-293. Following the completion of the project, many of the commercial structures along Allard Drive will be removed and Allard Drive relocated further to the west. As this will create more open space, the proposed project will incorporate landscape plantings as a component to beatify this as well as other areas within the project area. The type, number and location of the plantings will be determined at a later date

5.1.2.18 Construction Impacts:

The maintenance of traffic along I-293 and Granite Street is an important component of the design of this project to ensure inconveniences are kept to an absolute minimum. Currently traffic volumes along I-293 are approximately 41,000 vpd while Granite Street is approximately 28,000 vpd, which is one of the primary reasons for the reconstruction of I-293 and its bridge over Granite Street on new alignment. This will enable the existing traffic patterns to be maintained throughout the construction period. However, there may be brief periods where construction may cause temporary inconveniences to businesses, residents, pedestrians and motorists within the project area. Access to businesses and residences will be maintained at all times during construction. In addition, this project is anticipated to cause temporary increases in noise and dust levels within the project limits. Precautions will be taken to minimize these inconveniences, primarily for abutters within and adjacent to the project area. Standard precautionary measures will be implemented to assure that negative impacts are minimized and restricted to the limits and period of construction.

The proposed improvements to the interchange will entail temporary and permanent impacts to the westerly riparian bank of the Merrimack River within the project area. These impacts are discussed in the Wetlands section of this document. To minimize water quality degradation during construction, adequate erosion control will be established. Prior to the commencement of work, the contractor will submit to the Department a site-specific erosion control and storm water management plan.

5.1.2.19 Coordination:

Coordination meetings among the NHDOT, Manchester City Officials, the Office of Emergency Management, the Natural Resource Agencies (EPA, USF&WS, ACOE, NHWB, NHF&GD) and the Cultural Resource Agencies (NHDHR and ACOE) were held to discuss alternatives and measures to minimize harm to Social, Economic, Natural and Cultural resources. Impact avoidance and minimization measures, which were considered feasible and prudent were evaluated and incorporated into the design of this project where possible.

Coordination Meeting Dates:

Public Officials Meeting
11/10/99

Design Review with City Board of Alderman
03/27/00

Public Informational Meeting
06/19/00

Monthly Cultural Resource Agency Meetings
04/16/92
06/09/94
06/10/99
03/02/00
05/04/00
06/01/00

Monthly Cultural Resource DOE Review Meeting
02/22/00

Monthly Natural Resource Agency Meeting
05/21/92
06/16/99
11/17/99
05/17/00

Public Hearing
08/29/00

5.1.2.20 Public Hearing:

The testimony presented at the public hearing, which was held on August 29, 2000, was generally positive. There were, however, some concerns raised with regards to property impacts along Turner Street and Allard Drive. These concerns will be addressed through the Right-of-Way acquisition process. Pending an approved Resolution of Issues, the plan, as proposed, is expected to move forward into the final design stage.

6.0 SECTION 4(f) EVALUATION

6.1.1 Introduction:

Section 4(f) of the Transportation Act of 1966 (49 U.S.C. 303), and the regulations adopted to implement that act (23 CRF Section 771.135), mandate that the Federal Highway Administration (FHWA) may not approve the use of any significant publicly owned public park, recreation area, wildlife or waterfowl refuge, or any significant historic site, unless a determination is made that: (1) there are no feasible and prudent alternatives to the use of land from the property; and (2) all possible planning to minimize harm to the property resulting from such use has been undertaken.

Publicly owned land is considered to be a park, recreation or wildlife and waterfowl refuge when land has been officially designated as such or when the federal, state or local officials having jurisdiction over the land determine that one of its major purposes or functions is for park, recreation or refuge purposes.

For the purposes of assessing impacts to historic sites, these have been defined to include all individual properties and districts either currently on the National Register of Historic Places, or those determined eligible for inclusion, by the New Hampshire Division of Historic Resources (NHDHR) and FHWA.

The proposed project will result in the "use" of a portion of the Amoskeag Manufacturing Company Millyard Historic District and also "use" a portion of a parking lot associated with the West High School and West High School's athletic fields.

6.1.2 Proposed Action:

The proposed action is a bridge replacement and interchange improvement project. Due to existing structural and functional deficiencies associated with the I-293 bridge (134/067) over Granite Street, it was determined that it warrants replacement. In order to maintain traffic, the bridge will be reconstructed approximately 24 m (80 ft.) to the west of its current location. In all, this will require approximately 1,524 m (5,000 ft.) of I-293 to be reconstructed on a slightly new alignment (see Exhibits A2). The design also incorporates additional pavement width to accommodate left-hand shoulders, and a possible future third lane in both directions associated with the future overall 8 km (5 mi.) I-293 improvement project. The shift in the I-293 alignment will require the reconfiguration / reconstruction of the existing southbound on-ramp, which will result in the elimination of Turner Street. This project will also complete the interchange by constructing a new northbound on-ramp and a new southbound off-ramp, which currently do not exist, thereby providing a full interchange at Granite Street and allowing improved access to downtown Manchester. As a result of the proposed Interstate improvements, including the new southbound off-ramp, a segment of Allard Drive beginning at the Granite Street intersection and proceeding north to Chagnon Street will be relocated on new alignment, at the request of the City. For more information, please refer to Section 2.2 Description of Existing Conditions / Proposed Action.

6.1.3 Section 4(f) Historic Resources:

6.1.3.1 Description of Historic 4(f) Resources:

The section of the project area north of Granite Street falls within the boundaries of the Amoskeag Manufacturing Company Millyard Historic District (see Exhibit M & N). The District includes resources associated with the operations of the company on both the east and west sides of the Merrimack River. Founded in 1825, the Amoskeag Manufacturing Company began to develop along the east side of the Merrimack River in the 1830's. Construction of the mill buildings at this site began in 1838. The company initially produced cotton and woolen cloth and later expanded into the manufacturing of machinery including locomotives. The company expanded its operation west of the Merrimack River and north of Granite Street beginning in the 1870's. This

property has been determined to be eligible for the National Register of Historic Places under Criterion A, as one of the most significant 19th and early 20th century industrial complexes in the United States. Evolving between 1838 and 1936, the buildings of the millyard illustrate the growth of what was once the largest textile producer in the world. The holdings of the Amoskeag Manufacturing Company, on the western side of the Merrimack River played an integral role in the operation of the company and illustrates the expansion of the company in the 1880's, following the introduction of Gingham Production. The company suffered bankruptcy in 1936 during the Great Depression.

The boundaries of the District include the entire Amoskeag Millyard on both sides of the Merrimack River. On the west side of the river, the District is bounded on the south by Douglas Street, on the west by South Main and McGregor Streets and on the north by the Pepsi-Cola bottling plant north of the Coolidge Mill. The boundaries of the district encompass the entire area including the contributing and non-contributing structures. There has been a considerable amount of new construction in this area in the last 50 years, primarily consisting of metal and concrete storage buildings. At the present time there are four contributing buildings and five non-contributing buildings within the western portion of the district. The contributing buildings are the three story, brick pattern house erected in 1887; the four story brick mill No. 11 built in 1889 through 1891; the three story brick mill No. 11 annex or cloth room constructed in 1891; and an early 20th century, one story, brick chemistry lab. For additional information regarding the Historic District and the eligible properties refer to Section 5.1.2.16 – Cultural Resources.

Historic Inventory Forms with photos are on file at the NH Division of Historical Resources (NHDHR) and the NHDOT's Concord office for anyone who wishes to review them. A copy of the draft Memorandum of Agreement is attached (see Appendix I)

6.1.3.2 Impacts to Historic Section 4(f) Properties:

The proposed alignment shift of I-293, the construction of a new southbound off-ramp, and the relocation of Allard Drive will result in impacts to the Amoskeag Millyard Historic District and the acquisition of one of its contributing buildings, identified as the former brick chemistry lab (see Exhibit M & N for its location). The Historic District encompasses approximately 27 ha (66 acres).

The SHPO and FHWA have determined that the proposed action will have an "adverse effect" upon the Amoskeag Millyard Historic District, which is eligible for the National Register (Exhibit O). In all, the project will require approximately 16,171 m^2 (174,082 $ft.^2$) of Right-of-Way acquisition, and 543 m^2 (5,839 $ft.^2$) of permanent and 2,975 m^2 (32,031 $ft.^2$) of temporary easements from the Historic District. Of this, approximately 4,661 m^2 (50,177 $ft.^2$) of Right-of-Way will be acquired involving only one contributing property within the Historic District. This property includes the former brick chemistry lab building located on Allard Drive, which is currently owned by the Cohen Building Realty LLC. (see Exhibit M parcel 51).

6.1.3.3 Alternatives which Avoid Historic Section 4(f) Properties:

The proposed project has been designed to preserve the integrity of, and minimize the impacts to, the Amoskeag Manufacturing Company Millyard Historic District (and its contributing buildings), which is eligible for the National Register of Historic Places. Early coordination between federal, state and local officials (see coordination section) as well as ground reconnaissance, identified important resources that were taken into consideration during the design of this project. The following alternatives which would avoid impacts to 4(f) resources have been reviewed during the preliminary design process and were not recommended because of engineering or financial constraints, environmental impacts, property impacts, and/or failure of the alternatives to adequately address the area's transportation needs and/or safety problems.

6.1.3.3.1 No Build:

This alternative would not correct any of the existing structural deficiencies associated with the existing bridge nor would it improve the functional characteristics of the interchange. As traffic volumes and economic development in the area continue to rise, the existing conditions would continue to decline to intolerable levels. The impacts attributable to the proposed actions are not of a magnitude to warrant this alternative.

6.1.3.3.2 Reconstruct I-293 on Existing Alignment:

This alternative was evaluated during the early stages of project development in an effort to minimize social, environmental and cultural impacts, as well as reducing construction costs. This alternative fails to adequately maintain traffic flow and service for Interstate and Granite Street traffic. To proceed with this alternative would require phased construction, extensive lane closure periods, and a longer construction period. Furthermore, to construct the proposed northbound on-ramp would require direct impacts to the Merrimack River. In addition, the proposed southbound off-ramp would still impact Allard Drive and some of the commercial business properties along its frontage. For these reasons this alternative was not selected.

6.1.3.4 Measures to Minimize Harm to Historic Resources:

The design of the proposed action has been developed with the intent of preserving the integrity and minimizing the potential impacts to the Amoskeag Millyard Historic District (and its contributing buildings), which has been determined to be eligible for the National Register of Historic Places. Concrete retaining walls are incorporated into the design to minimize impacts to these cultural resources. These retaining walls act to minimize the overall footprint of I-293 and the proposed ramps. Based on a comprehensive evaluation, there do not appear to be any additional measures to minimize harm to the Historic District and its contributing buildings that can be utilized as part of this project. Where it was not feasible and prudent to avoid historic resources the following mitigation measures were evaluated and included as part of the project where possible:

- Any original and significant interior and exterior mechanical or architectural structural components associated with the cotton storage building will be recovered through photography, sketches, and description and salvage and preserved.

- Two interpretive signs will be developed and erected to identify the original character of the Amoskeag Manufacturing Millyard and identify the importance of the German residential neighborhood south of Granite Street.

- Landscape plantings will be incorporated into the project as an aesthetic treatment.

- The former Ca. 1905 laboratory will be documented following the Historic American Engineering Record (HAER) guidelines.

Although the cotton storage building is not a contributing element in the District, the SHPO requested that the interior will be reviewed prior to demolition and any original and significant interior and exterior mechanical or architectural structural components associated with the cotton storage building will be recovered through photography, sketches, and description and salvage and preserved. Additional detailed information about this district is on file at the Department of Transportation's Concord office or at the Division of Historical Resources.

6.1.4 Section 4(f) Recreational Resources:

6.1.4.1 Description of Section 4(f) Recreational Resources:

The West High School athletic fields and parking lot are the only public lands within the study area. They are located on the easterly side of Main Street across from the school itself (Exhibits A1, A2, C & G). Monies allocated from the L&WCF were used by the City of Manchester in 1979 to improve sports and playfields, including a circle track and distance jump facility at city owned and controlled West High Memorial Field (DRED project No. 33-00367). Overall this Section 4(f) parcel encompasses approximately 24,055 m^2 (258,940 $ft.^2$). The parking lot consists of 103 spaces and was completed in 1999, whereas the athletic fields are still under renovation.

6.1.4.2 Impacts to Recreational Section 4(f) Resources:

In association with the shifting of the Interstate and construction of the new southbound off-ramp, Allard Drive will need to be reconstructed on a new alignment (see Exhibit F & G). A portion of the new alignment crosses a small triangular section of the 4(f) property, where the parking lot is located (see Exhibit G). In all approximately 526 m^2 (5,663 $ft.^2$) of the parking lot will be impacted, which will result in the loss of 15 parking spaces.

6.1.4.3 Alternatives which Avoid Recreational 4(f) Resources:

In keeping with the provisions of Section 4(f) and LWCF Act of 1965, the DOT has evaluated alternatives to avoid impacts to the recreational property. These alternatives were reviewed during the preliminary design process and were not recommended because of engineering or financial constraints, environmental impacts, property impacts, and/or failure of the alternatives to adequately address the area's transportation needs and/or safety problems.

6.1.4.3.1 No Build:

This alternative would not correct any of the existing structural deficiencies associated with the existing bridge nor would it improve the functional characteristics of the interchange. As traffic volumes and economic development in the area continue to rise, the existing conditions would continue to decline to intolerable levels. The impacts attributable to the proposed actions are not of a magnitude to warrant this alternative.

6.1.4.3.2 Reconstruct I-293 on Existing Alignment:

This alternative was evaluated during the early stages of project development in an effort to minimize social, environmental and cultural impacts, as well as reducing construction costs. This alternative fails to adequately maintain traffic flow and service for Interstate and Granite Street traffic. To proceed with this alternative would require phased construction, extensive lane closure periods, and a longer construction period. Furthermore, to construct the proposed northbound on-ramp would require direct impacts to the Merrimack River. In addition, the proposed southbound off-ramp would still impact Allard Drive and some of the Section 4(f) resources along its frontage. For these reasons this alternative was not selected.

6.1.4.3.3 Discontinue Allard Drive:

This alternative would discontinue Allard Drive as a throughway, whereas it currently provides through access between Granite Street and Foundry Street. This option was discussed with City Officials, but it was strongly recommended that Allard Drive be reconstructed. This is primarily to ensure that emergency access is maintained to the remaining businesses including Alpha Bits Learning Center, a pre-school for children. Therefore, this alternative was not selected.

6.1.4.4 Measures to Minimize Harm to Recreational Resources:

The use of retaining walls along Allard Drive will minimize impacts to the recreational property to the extent practicable. To mitigate for the unavoidable impacts the Department is proposing to replace the 15 lost parking spaces and provide an additional 11 spaces, resulting in a total of 114 parking spaces in all (see Exhibit G). The area where this will occur is located immediately adjacent to the impacted portion of the existing parking lot. It includes a portion of the abandoned railroad corridor and a sliver of the Bogies property. The mitigation area encompasses approximately 890 m^2 (9,583 $ft.^2$). This will provide almost twice the area of that impacted by the project. Since the property is immediately adjacent to the conversion area, its fair market value (per acre) is estimated to be of equal value.

6.1.5 Coordination:

Coordination was established and input received from the SHPO (NHDHR), FHWA, Advisory Council on Historic Preservation, and Manchester City officials, to evaluate alternatives and measures to minimize harm to National Register eligible properties. An "Adverse Effect" memo was prepared which addresses unavoidable impacts to the Amoskeag Millyard Historic District (see Cultural Resources Section 5.1.2.16). The impacts and mitigation measures are documented in the MOA (see Appendix I). In addition, coordination was also established and input received from the FHWA, DRED, NPS, and West High School officials in association with the proposed impacts to the West High School parking lot and athletic field. As a result, the NPS and DRED concur on the proposed impacts, and agree that the proposed mitigation is appropriate (see Public Lands / Recreation Section 5.1.2.6 and Exhibits P1, P2, and P3).

6.1.6 Summary Statement:

Based upon the above considerations, there are no feasible and prudent alternatives to the use of land from historical or recreational 4(f) properties and the proposed action includes all planning to minimize harm to those properties, resulting from such use.

7.0 SUMMARY OF ENVIRONMENTAL COMMITMENTS*:*

The following environmental commitments have been made for this project.

1. Prior to the commencement of work, the contractor will submit an erosion control and storm water management plan specific to this project, which will address the proposed wetland impact areas and the water quality management of the Merrimack River, a "Class B" waterway. **(CONSTRUCTION / ENVIRONMENT)**

2. Precautions will be employed to minimize noise and dust levels during the construction period, primarily for the abutting receptors located adjacent to the project area. **(CONSTRUCTION)**

3. All appropriate steps will be taken in the handling of contaminated soil and groundwater during construction. Such steps will include off-site disposal of contaminated soil and treatment of contaminated groundwater prior to its discharge. **(CONSTRUCTION)**

4. Upon the completion of the drainage calculations and evaluation of surface water treatment needs, water quality treatment areas, specific to this project, will be developed. **(DESIGN / ENVIRONMENT)**

5. Noise abatement, in the form of a noise barrier will be provided adjacent to the southbound on-ramp for the residential neighborhood located south of Granite Street. It will extend approximately 503 m (1650 ft.) and will have a maximum height of 5.4 m (18 ft.). **(DESIGN / ENVIRONMENT / CONSTRUCTION)**

6. The traffic control plan will ensure that existing traffic patterns are maintained as much as possible while access for residences and businesses will be maintained at all times. **(DESIGN / CONSTRUCTION)**

7. Parking spaces acquired from West High School will be replaced and additional parking spaces added immediately adjacent to the existing parking lot. **(DESIGN / ENVIRONMENT / CONSTRUCTION)**

8. Mitigation measures for impacts to cultural resources will be incorporated as part of this project as discussed in the Cultural Resources Section of this document and the MOA (see Appendix I). **(ENVIRONMENT / CONSTRUCTION)**